

Please amend the above-identified patent application, without prejudice, as follows:

IN THE SPECIFICATION:

Replace the abstract as filed with the attached abstract.

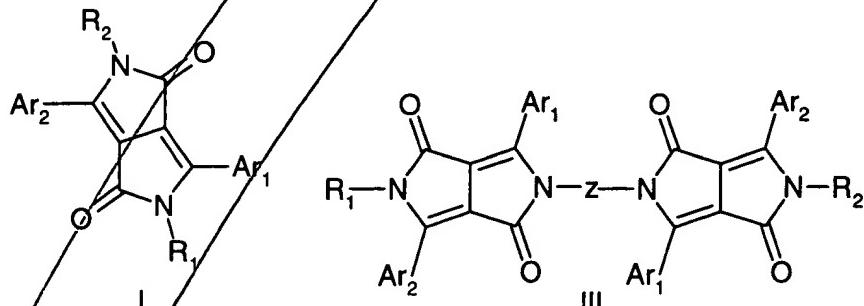
IN THE CLAIMS:

Amend claims 1-7 and 10 by replacement as follows:

1. (amended) Electroluminescent device comprising in this order

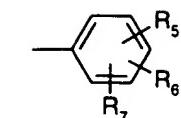
- (a) an anode
- (b) a hole transporting layer
- (c) a light-emitting layer
- (d) optionally an electron transporting layer and
- (e) a cathode

and a light-emitting substance, wherein the light-emitting substance is a diketopyrrolopyrrole ("DPP") represented by formula I or formula III

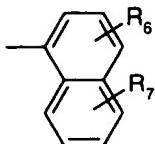


wherein R₁ and R₂, independently from each other, stand for C₁-C₂₅-alkyl, allyl which can be substituted one to three times with C₁-C₃-alkyl or Ar₃, or -CR₃R₄-(CH₂)_m-Ar₃, wherein R₃ and R₄, independently from each other stand for hydrogen, C₁-C₄-alkyl, or phenyl which can be substituted one to three times with C₁-C₃-alkyl,
Ar₃ stands for phenyl or 1- or 2-naphthyl which can be substituted one to three times with C₁-C₈-alkyl, C₁-C₈-alkoxy, halogen or phenyl, which can be substituted with C₁-C₈-alkyl or C₁-C₈-alkoxy one to three times, and m stands for 0, 1, 2, 3 or 4,

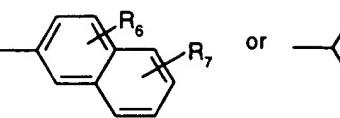
Ar₁ and Ar₂, independently from each other, stand for



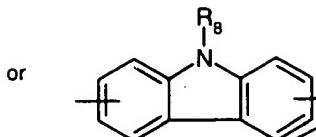
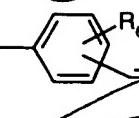
or



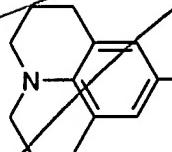
or



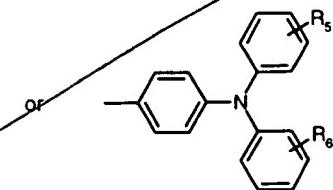
or



or julodidyl,



, which can be substituted one to four times with C₁-C₄alkyl, C₁-C₄alkoxy, or phenyl



wherein

R₅, R₆ and R₇, independently from each other, stand for hydrogen, cyano, halogen, C₁-C₆alkyl, -NR₈R₉, -OR₁₀, -S(O)_nR₈, -Se(O)_nR₈, or phenyl, which can be substituted one to three times with C₁-C₈alkyl or C₁-C₈alkoxy,

wherein R₈ and R₉, independently from each other, stand for hydrogen, phenyl, C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, -CR₃R₄-(CH₂)_m-Ph, R₁₀, wherein R₁₀ stands for C₆-C₂₄-aryl, or a saturated or unsaturated heterocyclic radical comprising five to seven ring atoms,

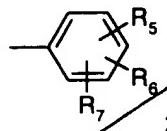
wherein the ring consists of carbon atoms and one to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, wherein Ph, the aryl and heterocyclic radical can be substituted one to three times with C₁-C₈alkyl, C₁-C₈alkoxy, or halogen, or R₈ and R₉ stand for -C(O)R₁₁, wherein R₁₁ can be C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, R₁₀,

-OR₁₂ or -NR₁₃R₁₄, wherein R₁₂, R₁₃, and R₁₄ stand for C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, C₆-C₂₄-aryl,

or

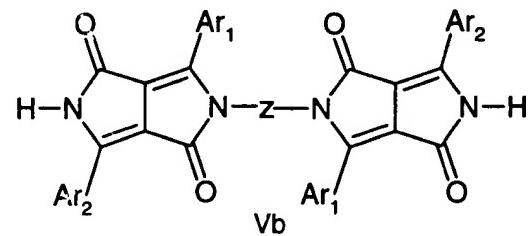
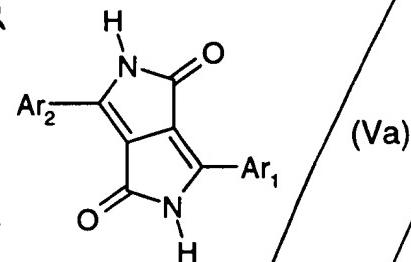
R₅, R₆ and R₇, independently of one another, stand for a saturated or unsaturated heterocyclic radical comprising five to seven ring atoms, wherein the ring consists of carbon atoms and one to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, wherein the aryl and heterocyclic radical can be substituted one to three times with C₁-C₈alkyl or C₁-C₈alkoxy,

or $-\text{NR}_6\text{R}_9$ stands for a five- or six-membered heterocyclic radical in which R_6 and R_9 together stand for tetramethylene, pentamethylene, $-\text{CH}_2\text{-CH}_2\text{-O-CH}_2\text{-CH}_2-$, or $-\text{CH}_2\text{-CH}_2\text{-NR}_5\text{-CH}_2\text{-CH}_2-$, and n stands for 0, 1, 2 or 3, and wherein Z stands for a diradical selected from the group consisting of a single bond, $\text{C}_2\text{-}$ C_6 alkylene, which can be substituted one to three times with $\text{C}_1\text{-}\text{C}_4$ alkyl, $\text{C}_1\text{-}\text{C}_4$ alkoxy, or phenyl, phenylene or naphthylene, with the proviso that R_6 and R_9 do not stand simultaneously for hydrogen if Ar_1 and Ar_2 stand for



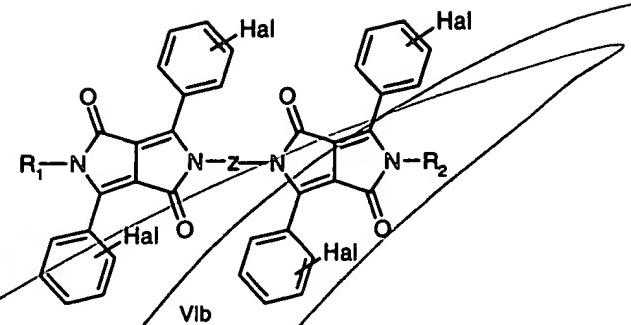
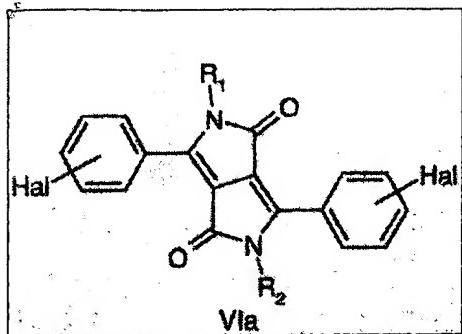
with the proviso that 2,5-dimethyl-3,6-di(p-methylphenyl)pyrrole[3,4-c]pyrrole is excluded.

2. (amended) Process for the preparation of compound I or III according to claim 7 in treating in a first step the DPP derivative of formula Va or formula Vb



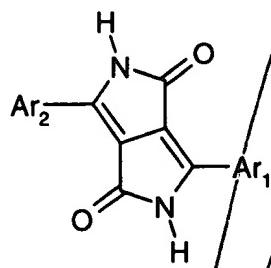
wherein Ar_1 and Ar_2 are, independently from each other, aryl radicals, with a base, then, in a second step, treating the reaction mixture obtained in the first step with an usual alkylating agent, wherein in the first step the base is a hydride, an alkali metal alkoxide or a carbonate, and the alkylating agent is a sulfonate, tosylate, mesylate, carbonate, sulfate, or halogen compound of the formula $(\text{R}_1)_{1 \text{ or } 2}\text{X}$, wherein X stands for SO_3^- , $(\text{p-Me-phenyl})\text{SO}_3^-$, $(2,4,6\text{-trimethyl-phenyl})\text{SO}_3^-$, $-\text{CO}_3^-$, $-\text{SO}_4^-$, or halogen, or a mixture of $(\text{R}_1)_{1 \text{ or } 2}\text{X}$ and $(\text{R}_2)_{1 \text{ or } 2}\text{X}$.

3. (amended) Process for the preparation of compounds I according to claim 7 comprising (a) treating in a first step the DPP derivative of formula VIa or formula VIb

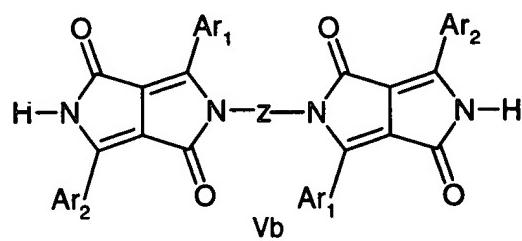


wherein R₁ and R₂ are independently from each other, hydrogen, C₁-C₂₅-alkyl, allyl which can be substituted one to three times with C₁-C₃-alkyl or Ar₁ or -CR₃R₄-(CH₂)_m-Ar₃, wherein R₃ and R₄ independently from each other stand for hydrogen, C₁-C₄-alkyl, or phenyl which can be substituted one to three times with C₁-C₃-alkyl. Hal stands for halogen, with a nucleophilic agent selected from a secondary amine, HNR₈R₉, a thiol, HSR₈, HS(O)_nR₈, an alcohol, HOR₁₀, a diselenide, or R₈(O)_nSe-Se(O)_nR₈, in a molar ratio of DPP VIa or VIb:nucleophilic agent in the range of 1.2:1 to 0.8:1, or, if R₂ has the same meaning as R₁ in the range of from 1:2.5 to 1:1, in the presence of an anhydrous dipolar aprotic solvent, and of an anhydrous base in an amount in the range of from 0.1 to 15 moles per mole of the nucleophilic agent, at a temperature in the range of from 100 to 220°C and under a pressure generally in the range of from 100 to 300 kPa, and optionally isolating the obtained compound

B1
Cont



(Va)



(b) then treating the obtained compound Va or Vb, wherein Ar₁ and Ar₂ are, independently from each other, aryl radicals, , with a base, thereafter in a second step, treating the reaction mixture obtained in the first step of (b) with an alkylating agent, wherein in the first step of (b) the base is a hydride, an alkali metal alkoxide or a carbonate, and the alkylating agent is a sulfonate, tosylate, mesylate, carbonate, sulfate, or halogen compound of the formula (R₁)₁ or ₂X, wherein X stands for SO₃⁻, (p-Me-phenyl)-SO₃⁻, (2,4,6-trimethyl-phenyl)SO₃⁻, -CO₃²⁻, -SO₄²⁻, or halogen, or a mixture of (R₁)₁ or ₂X and (R₂)₁ or ₂X.

4. (amended) Method of coloring high molecular weight organic material by incorporating at least one DPP compound I or III according to claim 7 into said material.

5. (amended) Colored high molecular weight organic material comprising

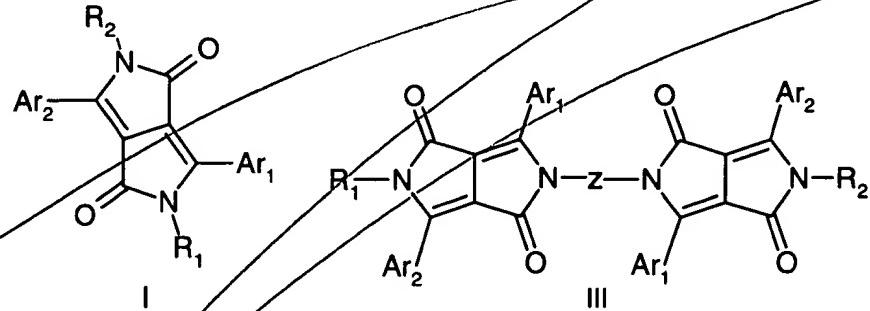
(a) 0.01 to 50% by weight, based on the total weight of the colored high molecular weight organic material, of a fluorescent DPP I or III according to claim 7, and

(b) 99.99 to 50% by weight, based on the total weight of the colored high molecular weight organic material, of a high molecular organic material, and

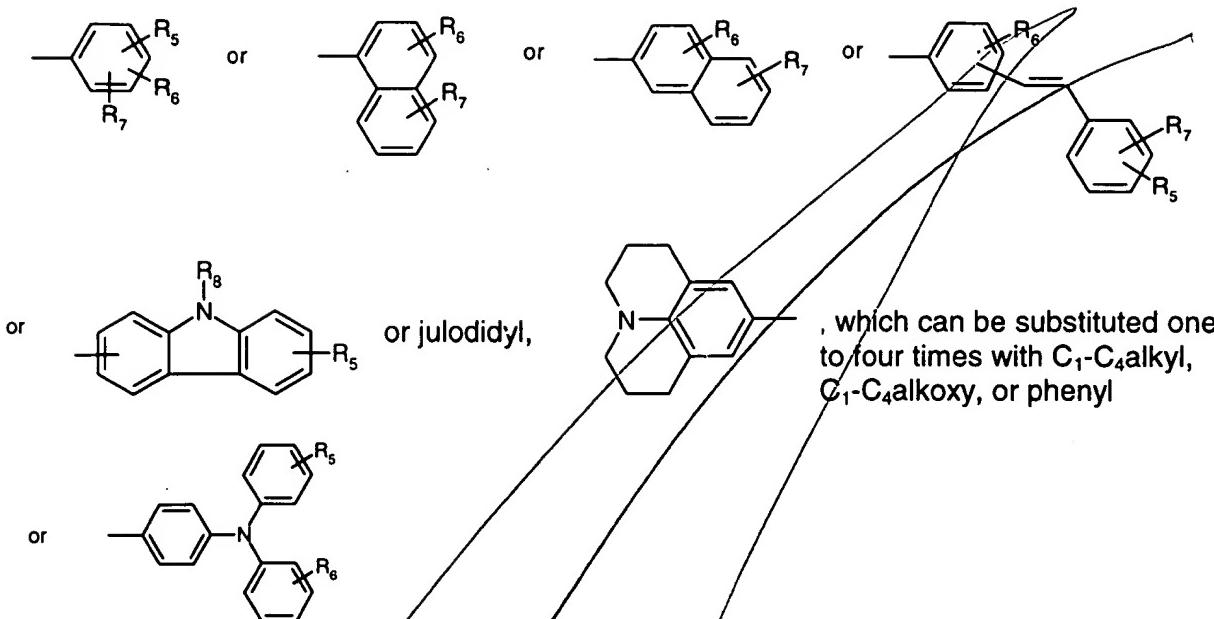
(c) if desired, customary additives in effective amounts.

6. (amended) Composition according to claim 5, wherein the high molecular weight organic material is a polyamide, a polystyrene, , polymethylmethacrylate or an ABS copolymer.

7. (amended) Fluorescent diketopyrrolopyrrole represented by formula I or formula III--



wherein R₁ and R₂, independently from each other, stand for C₁-C₂₅-alkyl, allyl which can be substituted one to three times with C₁-C₃alkyl or Ar₃, or -CR₃R₄-(CH₂)_m-Ar₃, wherein R₃ and R₄ independently from each other stand for hydrogen or C₁-C₄alkyl, or phenyl which can be substituted one to three times with C₁-C₃ alkyl,
Ar₃ stands for phenyl or 1- or 2-naphthyl which can be substituted one to three times with C₁-C₈alkyl, C₁-C₈alkoxy, halogen or phenyl, which can be substituted with C₁-C₈alkyl or C₁-C₈alkoxy one to three times, and m stands for 0, 1, 2, 3 or 4,
Ar₁ and Ar₂, independently from each other, stand for



, which can be substituted one to four times with C₁-C₄alkyl, C₁-C₄alkoxy, or phenyl

wherein

R₅, R₆ and R₇, independently from each other, stand for hydrogen, cyano, halogen, C₁-C₆alkyl, -NR₈R₉, -OR₁₀, -S(O)_nR₈, -Se(O)_nR₈, or phenyl, which can be substituted one to three times with C₁-C₈alkyl or C₁-C₈alkoxy,

wherein R₈ and R₉, independently from each other, stand for hydrogen, phenyl, C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, -CR₃R₄-(CH₂)_m-Ph, R₁₀, wherein R₁₀ stands for C₆-C₂₄-aryl, or a saturated or unsaturated heterocyclic radical comprising five to seven ring atoms, wherein the ring consists of carbon atoms and one to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, wherein Ph, the aryl and heterocyclic radical can be substituted one to three times with C₁-C₈alkyl, C₁-C₈alkoxy, or halogen, or R₈ and R₉ stand for -C(O)R₁₁, wherein R₁₁ can be C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, R₁₀, -OR₁₂ or -NR₁₃R₁₄, wherein R₁₂, R₁₃, and R₁₄ stand for C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, C₆-C₂₄-aryl, or R₅, R₆ and R₇, independently of one another, stand for a saturated or unsaturated heterocyclic radical comprising five to seven ring atoms, wherein the ring consists of carbon atoms and one to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, wherein the aryl and heterocyclic radical can be substituted one to three times with C₁-C₈alkyl or C₁-C₈alkoxy,

*B1
Conf
Sub
Court*

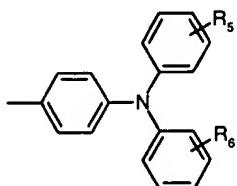
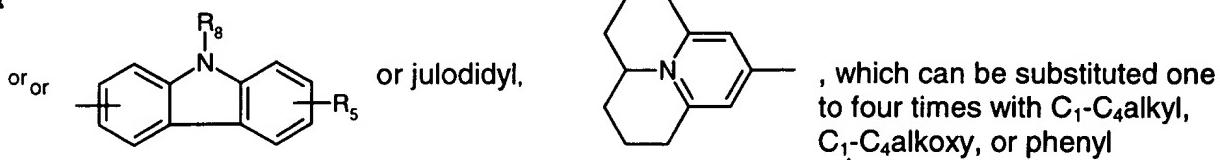
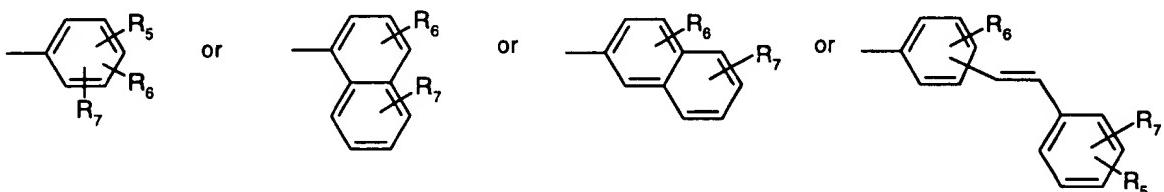
or $-NR_8R_9$, stands for a five- or sixmembered heterocyclic radical in which R_8 and R_9 , together stand for tetramethylene, pentamethylene, $-CH_2-CH_2-O-CH_2-CH_2-$, or $-CH_2-CH_2-NR_5-CH_2-CH_2-$, and n stands for 0, 1, 2 or 3, wherein Z stands for a diradical selected from the group consisting of a single bond, C_2 -alkylene, which can be substituted one to three times with C_1-C_4 alkyl, C_1-C_4 alkoxy, or phenyl, enylene or naphthylene, with the proviso that R_8 and R_9 do not stand simultaneously for hydrogen; or

$= R_2 = C_1-C_8$ alkyl, $Ar_1 = Ar_2 =$ phenyl, $R_s = -NR_8R_9$ in 4-position, $R_5 = R_6 =$ hydrogen, and $R_8 = R_9 = C_1-C_8$ alkyl or phenyl;

$= R_2 = C_1-C_8$ alkyl, $-(CH_2)_m-Ph$, $Ar_1 = Ar_2 =$ phenyl, $R_s = R_6 =$ hydrogen, $R_7 = -OR_{10}$, $-N(R_8)_2$ or substituted or substituted phenyl in para-position, and $R_8 = C_1-C_8$ alkyl, phenyl or a heterocyclic radical, both unsubstituted or substituted, or C_5-C_{12} -cycloalkyl; or

$= R_2 = -CH_2-Ph$, wherein phenyl can be substituted with phenyl, naphthyl or C_1-C_4 alkyl up to 9 times, $Ar_1 = Ar_2 =$ phenyl, $R_s = R_6 =$ hydrogen, $R_7 = C_1-C_8$ alkyl or phenyl.

10. (amended) Fluorescent diketopyrrolopyrrole of the formula (A2), (A3) or (A4) according to claim 8, where Ar₁ and Ar₂, independently from each other, stand for



wherein

R₅, R₆ and R₇, independently from each other, stand for hydrogen, cyano, halogen, C₁-C₆alkyl, -NR₈R₉, -OR₁₀, -S(O)_nR₈, -Se(O)_nR₈, or phenyl, which can be substituted one to three times with C₁-C₆alkyl or C₁-C₆alkoxy, wherein R₈ and R₉, independently from each other, stand for hydrogen, phenyl, C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, -CR₃R₄-(CH₂)_m-Ph, R₁₀, wherein R₁₀ stands for C₆-C₂₄-aryl, or a saturated or unsaturated heterocyclic radical comprising five to seven ring atoms, wherein the ring consists of carbon atoms and one to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, wherein Ph, the aryl and heterocyclic radical can be substituted one to three times with C₁-C₆alkyl, C₁-C₆alkoxy, or halogen, or R₈ and R₉ stand for -C(O)R₁₁, wherein R₁₁ can be C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, R₁₀, -R₁₂ or -NR₁₃R₁₄, wherein R₁₂, R₁₃, and R₁₄ stand for C₁-C₂₅-alkyl, C₅-C₁₂-cycloalkyl, C₆-C₂₄-aryl, or a saturated or unsaturated heterocyclic radical comprising five to seven ring atoms, wherein the ring consists of carbon atoms and one to three hetero atoms selected from the group consisting of nitrogen, oxygen and sulfur, wherein the aryl and heterocyclic radical can be substituted one to three times with C₁-C₆alkyl or C₁-C₆alkoxy, or -NR₈R₉ stands for a five- or six-membered heterocyclic radical in which R₈ and R₉ together stand for tetramethylene, pentamethylene, -CH₂-CH₂-O-CH₂-CH₂-, or -CH₂-CH₂-NR₅-CH₂-CH₂-, and n stands for 0, 1, 2 or 3.

*B2
Conf*

Insert new claims 12 and 13.

12. (new) An electroluminescent device wherein R₈ and R₉, together stand for -CH₂-CH₂-O-CH₂-CH₂-.

13. (new) A compound according to the formulae

